



# EJ2210 Analysis of Electrical Machines 7.5 credits

Elmaskinanalys

This is a translation of the Swedish, legally binding, course syllabus.

## Establishment

Course syllabus for EJ2210 valid from Autumn 2007

## Grading scale

A, B, C, D, E, FX, F

## Education cycle

Second cycle

## Main field of study

Electrical Engineering

## Specific prerequisites

## Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

## Intended learning outcomes

To provide an extended knowledge of:

- motor applications, pumps, fans, electrical vehicles,
- nonsinusoidal mmf waves, supply voltage harmonics and windings,
- induction machines, derivation of the equivalent circuits parameters,
- influence of magnetic saturation,
- influence of temperature dependence
- models for transient analysis of electrical machines,
- the influence of converter control on electrical machines,
- analysis of electrical machines by means of finite element analysis,
- permanent magnet motors.

## Course contents

Magnetic circuits and materials, AC windings. Extended models of electrical machines including permanent magnet motors. Asymmetric supply voltage and load. dq analysis for transient modelling of electrical machines. Space vector analysis. Finite element analysis of electrical machines.

## Course literature

Sadarangani, C., Electrical Machines – design and analysis of Induction and Permanent Magnet Motors, KTH 2006.

## Examination

- LAB2 - Laboratory Work, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Exercises, 1.5 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

## Other requirements for final grade

One written examination. (TEN1; 4,5 cr)

Two project exercises.(LAB1; 1,5 cr, LAB2; 1,5 cr)

## Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.